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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,152	08/01/2003	Rodney S. McKenzie	RAYO 9324(RP-1610A)	5432
49376 7590 01/26/2007 SENNIGER POWERS (RAYO) ONE METROPOLITAN SQUARE 16TH FLOOR ST. LOUIS, MO 63102			EXAMINER WILLIAMS, SHERMANDA L	
			ART UNIT 1745	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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uspatents@senniger.com

Office Action Summary	Application No. 10/633,152	Applicant(s) MCKENZIE ET AL.	
	Examiner Shermanda L. Williams	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12 and 64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-12 and 64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/25/06 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This office Action is responsive to the Amendment After Non-Final Rejection filed 10/25/2006. Claims 1, 3-12 and 64 are pending. Claims 2, and 13-63 are canceled. Claims 1, 3, 4, 5, and 12 have been amended. Claim 64 has been added.

Drawings

1. It is acknowledged that replacement drawings were received on 10/25/2006.
2. The examiner questions whether Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated per paragraphs 3-5 of the current specification. See MPEP § 608.02(g). If Figures 1A and 1B are prior art, corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to because Figure 8 has "rolled" misspelled in block 134. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 5, 6, 10, 11, 12, and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Howard et al., US 4,476,002. Howard teaches a metal current carrier for use in constructing air cathodes for electrochemical cells. The current carrier is a thin nickel screen with metal particles sintered to the surface of the screen on one side (col. 3 lines 10-15). The coarse metal particles bonded to the nickel wire (col. 4 lines 26-27) produce a conductive and mechanically supportive mesh. The coarse metal particles provide a rough textured surface (one having nodules) and increase the interfacial layer surface area of the screen (col. 3 lines 28-30). The metal particles bonded to the nickel

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wires are 4.1 to 5.8 mils in length (col. 5 lines 5-7 and claim 1). The metal particles bonded to the nickel wire to produce the current carrier are normally made of the same material as the wire (col. 4 lines 48-51 and claim 21). Activated carbon and PTFE (disposed on the outer surface) are used in the active layer of the electrode as the active material and binder (col. 8 lines 11-15 and claim 27). The current carrier contains the transitional metal, silver (claim 20). The columnar grains are formed due to the relationship of the particle size and the mesh spacing (col. 4 line 60 to col. 5 line 7). The particles are no smaller than 1/20th the size of the mesh opening, thereby forming columnar grains over the surface.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard (US 4,476,002). Howard teaches a metal current carrier for use in constructing air cathodes for electrochemical cells. The current carrier is a thin nickel screen with metal particles sintered to the surface of the screen on one side (col. 3 lines 10-15). The coarse metal particles bonded to the nickel wire (col. 4 lines 26-27) produce a conductive and mechanically supportive mesh. The coarse metal particles provide a rough textured surface (one having nodules) and increase the interfacial layer surface

area of the screen (col. 3 lines 28-30). The metal particles bonded to the nickel wires are 4.1 to 5.8 mils in length (col. 5 lines 5-7 and claim 1). The metal particles bonded to the nickel wire to produce the current carrier are normally made of the same material as the wire (col. 4 lines 48-51 and claim 21).

8. Howard teaches depositing a catalyst by electroplating techniques (col. 4 lines 48-51; col. 6 lines 8-12; col. 8 Example 1). Howard et al. discloses that the metal particles deposited on the current collector screen are ordinarily composed of the same metal used in the screen construction (col. 4 lines 48-51). Therefore, nickel particles are deposited onto the nickel wires. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to deposit the nickel particles via a combined method of sintering and rolling in such a manner to ensure proper adhesion or bonding (for electrical communication) between the members of the nickel wire mesh and the applied nickel particles such as taught by Howard.

9. Claims 3 and 4 are product-by-process claims. The claims are alternatively unpatentable. The courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. See MPEP 2113. The products of claims 3 and 4 and that of claim 2 appear to be the same. Both the cited reference and the claimed invention teach a mesh with metal deposited at the joint point of its members.

10. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard. The discussion presented by Howard as to the mesh and particle dimensions of the screen would render the claimed dimensions obvious (col. 4 line 60 to col. 5 line 7). Furthermore, the courts have held that where the only difference between the prior

art and the claimed invention was a recitation of relative dimension(s) of the claimed device and the device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. See MPEP 2144.04.

Response to Arguments

15. Objections to claims to 4 and 16 are withdrawn due to claim 4 being amended and claim 16 being canceled. The double patenting rejection of claim 16 is moot due to the cancellation of claim 16. Upon consideration of the applicants remarks, the rejection of claims 3 and 4 under 35 U.S.C 102(b) as being anticipated by Howard et al., US 4,476,002 is withdrawn. Also, the rejection of claims 1, 2, 3, 5, 6, 7, 9, 10, 11 and 12 under 35 U.S.C. 103(a) as being unpatentable over Kadija (US 4,423,252) in view of Venkatesan et al. (US 6,998,184) is withdrawn.

16. The applicant argues that the wires of the present application are bonded to one another by the depositing of metal at the joints of the woven wires to "form a single metallurgical unit". This is not in the claim. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a single metallurgical unit") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

17. The applicant argues that the current application electroplates nickel on the screen. This is encompassed by the prior art (Howard et al. US 4,476,002) in that

nickel particles are sintered to the surface of the nickel screen to include depositing nickel at the junction point of the lateral and longitudinal nickel wires. Howard et al. discloses that the metal particles deposited on the current collector screen are ordinarily composed of the same metal used in the screen construction (col. 4 lines 48-51). The depositing of the nickel particles at the meeting point of the nickel wires reinforces the screen. The claims do not exclude bonding the screen by mechanical means and can include additional bonding.

18. The melting point of nickel is 1453°C per published data found at [www.http://chemistry.about.com/library/blni.htm](http://chemistry.about.com/library/blni.htm) (sources are Los Alamos National Library (2001), Crescent Chemical Company (2001), Lange's Handbook of Chemistry (1952)). On page 9 and 10 of the current specification, the applicant admits in paragraphs 41-42 that the rolling of the wire mesh partially bonds the wires. As well, the applicant discusses that the wires are annealed at 800 to 1000°C. The applicant has provided no standard or limits for the amount of bonding present in the claimed product. Therefore, the prior art reads on the claims as presented in that the nickel particles in the prior art are bonded to the wire screen via a combined process of sintering at 1100°C and rolling the screen (col. 5 lines 46-51).

19. Furthermore, electroplating is a process and the applicant is claiming a product as indicated in claim 1. The courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. See MPEP 2113. The products of claims 3 and 4 and that of claim 1 appear to be the same. Both the cited reference and the claimed invention teach a mesh with metal deposited at the joint point of its members

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Shun et al. US 6,127,061 teaches an improved air cathode used in metal-air batteries; Tatarchuk et al. WO 90/14224 teaches a mixed fiber composite structure for use as an electrode.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shermanda L. Williams whose telephone number is (571) 272-8915. The examiner can normally be reached on Mon.-Thurs. 7 AM - 4:30 PM and alternating Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



SUSY TSANG-FOSTER
PRIMARY EXAMINER